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(54) COMPOST BINS

(71) I, CLIFFORD ARTHUR WILSON, a British subject of 58 Oakwood Avenue, Purley, Surrey, CR2 1AQ, England, do hereby declare the invention for which I pray that a patent may be granted to me and the method by which it is to be performed to be particularly described in and by the following statement:-

This invention relates to compost bins, particularly those to which access may be effected at chosen peripheral locations. It also relates to a method of producing compost in a continuous process.

The decomposition of discarded vegetable produce, commonly known as compost normally takes place in two stages. One container is usually used though a second can help to keep a continual flow of compost and provide space for refuse. The first stage is heat generating when ventilation is required by aerobic creatures. The later stage also requires ventilation to prevent putrefaction. Decomposition takes place which is generally exothermic, the heat generated thereby accelerating the decomposing process. When the decomposition is complete or at any chosen time, the matter is removed from the container and may be used for any of a number of purposes.

Together with the need for ventilation a good compost bin requires to be made from a heat retaining material, i.e. wood or plastics. PVC has good thermal insulating properties and is often preferred. Polyethylene may also be used.

Many types of containers may be used in the above described process. However, for a number of reasons it is often preferred to remove matter from the container at or adjacent the lowest point. For example, in domestic applications it is usual to discard compost periodically into a ventilated enclosure and subsequently a plurality of layers are formed, each layer or part of a layer being at a different stage of decomposition.

The present invention aims to provide for easy sequential transference of compost out of a container therefor.

The present invention provides a method of producing compost from vegetable matter comprising the steps of:

providing a plurality of similar panels, each having parallel straight edges of complementary cross-sections whereby one edge of a panel can slideably engage the other edge of another panel;

slideably interengaging said plurality of panels to form a continuous wall of a bin on a substantially horizontal surface having a plurality of sliding substantially vertical joints;

discharging vegetable matter into the bin so formed;

storing the vegetable matter in the bin for a time sufficient to permit decomposition of at least a lower portion of the matter in the bin; and

raising at least one of the panels with respect to adjacent panels in the wall to afford access to said lower portion and removing compost therefrom.

A compost bin, for use in the preferred method of the invention comprises a plurality of panels each having two parallel straight edges, the cross-section of one edge being complementary to that of the other edge whereby the one edge of each panel slideably engages the other edge of an adjacent panel to form sliding joints, each panel additionally comprising ventilation apertures wherein for ventilating matter contained in the bin, and the bin including a removable impervious cover closing the top thereof. At least a portion of the cover would be removed from the bin for the delivery of vegetable matter thereto. In especially preferred embodiments, each panel is provided with a first side consisting of a straight beaded edge and a second side consisting of a straight slot of concave

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 15 produce, commonly known as compost normally takes place in two stages. One container is usually used though a second can help to keep a continual flow of compost and provide space for refuse. The first stage
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discharging vegetable matter into the bin so formed;

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SPECIFICATION NO 1427331

Inventor: CLIFFORD ARTHUR WILSON

By a direction given under Section 17 (1) of the Patents Act 1949 this application proceeded in the name of ROTOCROP INTERNATIONAL LIMITED, a Bahamian Corporation, PO Box N7768, Nassau, Bahamas.

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section dimensioned to accommodate the bead of said first side such that the bead of one panel may slide in the slot of an adjacent panel, a plurality of said panels being connected at said first and second sides to form at least a part of the wall of the bin, one panel being movable in relation to adjacent panels by movement of said bead in the slot of an adjacent panel and by movement of said straight slot enclosing the bead of another adjacent panel for access to the bin interior. In particularly preferred embodiments the bin wholly comprises a plurality of similar panels.

The invention also provides a kit for creating a compost bin, which kit comprises a plurality of panels each having two parallel straight edges, the cross-section of one edge being complementary to that of the other edge whereby the one edge of each panel can slideably engage the other edge of another panel to form sliding joints, each panel additionally comprising ventilation apertures therein; the kit further including an impervious cover for closing the top of the bin to be created.

The panels used in the practice of the invention are normally ventilated; for example, they might be made from a net-like structure which is preferably either inherently rigid or held in a rigid frame. Alternatively, they might be made from an imperforate sheet material. Many available materials are suitable for either use. The inert characteristics of plastics materials make their use eminently suitable.

The cross-sections of the bead and slot are preferably substantially the same. The cross-sections can be substantially circular if adjacent panels are to be pivotable about their common connection, but the relative orientation may be fixed by using a polygonal section. A hexagonal section is sometimes preferred as, in conjunction with the elastic properties of plastics material, adjacent panels may be forced into a particular resilient orientation without dismantling the connection.

To simplify the manufacturing of a container according to the invention each panel may be made identical, the number of panels to a container determining the resultant size thereof. The slot-like construction of the invention means that the size of the container may be altered very easily without replacing any part of the unit.

Containers used in the preferred application of the invention are not normally provided with bases or lids but are fixed or at least supported directly on the ground. By the provision of sliding connections between adjacent panels the container may easily rest stably on uneven ground. On a steep slope, for example, wall portions of different heights may be used.

Lids may be provided connected to at least one of the panels. While flexible lids are most convenient, such as a sheet of plastics material, a substantially rigid lid may be hinged along the upper edge of one panel. Other types of connection are contemplated such as a two-part lid hinged at the join, each end of the hinge being supported on the periphery, or a lid attached to the periphery with a closable opening therein.

Normally a container according to the invention would comprise panels only connected on two sides thereof. However, the height of each panel may be easily increased by supporting other wall-portions on those of the base container. Simple ball and socket mechanisms could be provided in the top and bottom of each panel to allow for this. Thus the height of a container may be varied along the periphery thereof if desired as well as a whole by using panels having a variety of heights in one construction, some being on top of each other if desired. By using a plurality of panels at different circumferential areas access may be provided at different heights.

The panels would normally be planar but they may be curved or even corrugated if desired. In this way extra strength may be imparted to the structure. Other known types of reinforcement may also be used.

A container according to the invention consisting entirely of panels may be conveniently marketed in kit form. This also provides for easy transport between useful locations.

The invention will now be further described by way of example and with reference to the accompanying drawings wherein:

Figure 1 is a perspective view of an open-ended compost bin constructed for use in accordance with the invention.

Figure 2 is a plan view of a connection between adjacent panels.

Figure 3 shows a curved panel for use in the compost bin of the present invention.

Figure 4 shows a manner in which a panel like that of Figure 3 may support another directly above it.

Figure 5 shows a plan view of another compost bin constructed for use in accordance with the invention.

Figure 6 shows an elevation of the bin of Figure 5.

Figure 7 shows a cross-section of a panel according to another embodiment of the invention.

Figure 8 shows a front view of a panel suitable for use in the bin of Figures 5 and 6.

Figure 1 shows a generally circular open-ended compost bin 1 comprising a plurality of panels 2 with adjacent vertical edges meeting at joins 3 and adjacent horizontal edges meeting at joins 4. Panel 21 is shown displaced from the closed position to provide

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access through opening 6 to the enclosure 7.

Figure 2 shows a manner in which joining between adjacent panels 2,2¹ may be effected. Bead 13, formed in panel 2 is shown in convex forked cross-section edge 11 formed in portion 2¹. Bead 13 may slide in cross-section 11. This type of join is especially useful when it is desired to reduce ventilation to a minimum. The dimensions of edge 11 and bead 13 may be varied to allow pivoting adjacent panels. The cross-sections thereof could be circular or polygonal, though it will be appreciated that exact sections are not critical.

Figure 3 shows a panel 2 formed from a net-like structure in a wire frame 18 having feet 19 at the two lower corners thereof and sockets 20 at the upper corners. Slot 11 and beading 13 are formed integrally on opposite sides of the panel. Figure 4 shows socket 20 supporting a foot 19¹ of a similar wall portion.

Figure 5 shows a container constructed in accordance with the invention as a polygonal structure. Thirteen panels 20, each about 9 inches wide, are shown joining at 22 in a manner generally as discussed with reference to Figure 2. A flexible PVC sheet cover 24 is included for covering the top of the bin and having eyelets 26 for tying it either to the ground or to the constituent panels of the bin. A diameter of approximately 36 inches is contemplated for this structure. Another preferred form of container comprises nineteen panels, each about 6 inches wide.

Figure 6 shows an elevation of the structure of Figure 5 and discloses ventilation holes 28 in wall portions 20. Movement of any of the wall-portion 20 in relation to the remaining portions provides access to the interior. The height of a panel could be about 36 inches.

Figure 7 shows the cross-section of a panel according to one embodiment of the invention which could be used in a structure as shown in Figures 5 and 6. Convex forked cross-sections 30 and 32 are shown at opposite sides of the panel. It should be noted that they are of different sizes such that cross-section 30 can slot into the cavity 34 of cross-section 32.

Figure 8 shows a front view of a panel as used in the structure of Figure 6. The ventilation holes 28 are circular having a diameter of about 1½ inches.

The dimensions are not critical but a preferred size for the panel is in the range of 6 to 9 inches wide. The height may be any desired value and the overall plan area merely depends on the size and number of panels used.

In preferred embodiments the panels are made from a plastics material. Polyvinyl-chloride and Polyethylene are eminently suitable.

The use of the bin in accordance with the method of the invention will now be briefly described with reference to the embodiment of Figures 5 and 6.

The bin is constructed and set on a substantially horizontal surface. Although the vertical flexibility of the structure permits setting on an inclined, or even undulating surface, horizontal support surfaces are preferred. In some respects, an undulating surface is advantageous in that it assists in ventilating the decomposing matter from below. Controlled under-ventilation is easier to provide, however, on a flat surface. Waste vegetable matter is delivered to the bin and the cover 24 is affixed to control the heat loss from the interior of the bin. As more waste vegetables become available, they are added to the matter already in the bin. Only a portion of the cover need be displaced for such further deliveries. For as long as the vegetable matter is in the bin it will continue to decompose. After a period of time, which will vary according to ambient conditions and the nature of the matter itself, one or more of the panels 20 is raised, the panel or panels sliding in joints 22, and the compost withdrawn with a shovel or any chosen means. Upper layers of more recently discarded matter then falls to take the place of the matter removed. By providing raisable panels around the entire circumference of the bin, substantially an entire layer of compost may be removed without reducing the quantity of matter at an earlier stage of decomposition retained in the bin.

WHAT I CLAIM IS:-

1. A method of producing compost from vegetable matter comprising the steps of:
 - providing a plurality of similar panels, each having parallel straight edges of complementary cross-sections whereby one edge of a panel can slideably engage the other edge of another panel;
 - slideably interengaging said plurality of panels to form a continuous wall of a bin on a substantially horizontal surface having a plurality of sliding substantially vertical joints;
 - discharging vegetable matter into the bin so formed;
 - storing the vegetable matter in the bin for a time sufficient to permit decomposition of at least a lower portion of the matter in the bin; and
 - raising at least one of the panels with respect to adjacent panels in the wall to afford access to a said lower portion and removing compost therefrom.
2. A method according to Claim 1 including the step of covering the bin for substantially the duration of the storing step.
3. A method according to Claim 1 or Claim 2 wherein vegetable matter is discharged into the bin on top of matter already

placed therein.

4. A method according to any preceding Claim wherein the bin wall is entirely made up of similar panels, the method including the removal of compost from said lower portions by the raising of at least one of the panels sequentially at different peripheral locations, and withdrawing compost from such locations. 50
5. A method according to any preceding Claim including the step of ventilating the vegetable matter while it is decomposing. 55
6. A method of producing compost from decomposing vegetable matter substantially as herein described. 60
7. A compost bin for use in a method according to any preceding Claim comprising a plurality of panels each having two parallel straight edges, the cross-section of one edge being complementary to that of the other edge whereby the one edge of each panel slideably engages the other edge of an adjacent panel to form sliding joints, each panel additionally comprising ventilation apertures therein for ventilating matter contained in the bin, and the bin including a removable impervious cover closing the top thereof. 65
8. A compost bin according to Claim 7 wherein the one edge of each panel consists of a straight beaded edge and wherein the other side consists of a straight slot of concave section dimensioned to accommodate the bead of said first side such that the bead of one panel may slide in the slot of an adjacent panel, a plurality of said panels being connected at said first and second sides to form at least a part of the wall of the bin, one panel being movable in relation to adjacent panels by movement of said bead in the slot of an adjacent panel and by movement of said straight slot enclosing the bead of another adjacent panel for access to the bin interior. 70
9. A compost bin according to Claim 8 wherein each of said bead and slot has a forked cross-section. 75
10. A compost bin according to Claim 8 or Claim 9 wherein the cross-sections of said bead and slot are polygonal. 80
11. A compost bin according to any of Claims 8-10 wherein the external surface of said bead corresponds to the portion of the internal cross-section of said slot at the extremity thereof. 85
12. A compost bin according to any of Claims 7-11 wherein each panel is planar, or curvilinear planar intermediate said first and second sides. 90
13. A compost bin according to any of Claims 7-12 including means for releasably securing the cover to the bin. 95
14. A compost bin substantially as described herein and with reference to the accompanying drawings. 100
15. A kit for creating therefrom a compost bin according to any of Claims 7-14 comprising a plurality of panels each having two parallel straight edges, the cross-section of one edge being complementary to that of the other edge whereby the one edge of each panel can slideably engage the other edge of another panel to form sliding joints, each panel additionally comprising ventilation apertures therein; the kit further including an impervious cover for closing the top of the bin to be created. 105
16. A kit according to Claim 15 wherein each of said first and second sides has a forked cross-section. 110
17. A kit according to Claim 15 or Claim 16 wherein each panel is moulded in a plastics material having heat retaining properties. 115

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